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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,630	02/20/2004	Tsunemoto Suzuki	16NM02112	7201

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EXAMINER	
SHIPMAN, JEREMIAH E	

ART UNIT	PAPER NUMBER
2859	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/783,630	SUZUKI ET AL.	
	Examiner	Art Unit	
	Jeremiah Shipman	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *10-11* is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Objections

1. Claims 2, 5, and 7 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims appears to contradict the claims from which they depend, since claims 2 and 5 imply the existence of more than one capacitor, while claims 1 and 4 positively claim only one capacitor.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dejon et al (US 4,851,780) in view of Carlson (US 5,304,932).

Regarding claim 1, Dejon et al. disclose an RF shield **31** (col 1, lines 44-47) for use in MRI systems (col 1, lines 4-12), the RF shield comprising a connector **16** configured to connect a capacitor **7**, **67** to the RF shield, wherein the shield is grounded via the capacitor (Fig 3). Dejon et al. do not teach the use of such a device in a vertical-field MRI system.

Carlson teaches a vertical-field MRI system (Fig 1) comprising upper and lower RF shields (Fig 1, 2) which are coupled to ground only through capacitances (col 4, lines 39-41), which allows open access to the patient (col 1, lines 50-54). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the MR probe of Dejon et al. in a vertical field MRI system such as the one taught by Carlson et al., in order to gain the conventional advantages of a vertical-field MRI system, such as access to the patient (col 1, lines 50-54) while retaining the advantages of the probe of Dejon et al. for signal detection.

Regarding claims 2-3, the capacitors **7**, **67** of Dejon et al. is a variable capacitor, and thus may be set to the smallest value or to a value above 1000 pF in order to properly tune the RF frequency (Dejon, col 4, lines 44-56). Further, as Dejon et al. disclose only one capacitor **67** grounding the RF shield in the embodiment depicted in Fig 5, it is necessarily "the smallest value" of all (one of) the capacitors grounding the RF shield.

4. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richard et al. (US 5,592,087) in view of Carlson.

Regarding claim 4, Richard et al. teach an MRI system comprising a capacitor **60**, an RF coil **50**, a gradient coil **30**, and an RF shield **60** configured to prevent coupling between the RF coil and the gradient coil (col 1, lines 46-50), wherein the RF shield is grounded via a capacitor (col 4, lines 54-55; col 4 line 66 – col 5, line 1; col 5, lines 44-46; an RF shield **72** is connected to ground at points **76** both directly and through the

capacitor formed by the sandwich of shield conductors **72**, **74** and shield insulator **62** and gaps **70**; alternatively, the fact that the RF shield *is* the capacitor could be read as the shield being grounded "via" the capacitor.). Richard et al. do not teach the use of such a shield in a vertical field-type MRI system.

Regarding claim 6, Richard et al. teach an MRI system comprising an RF shield, wherein the RF shield is grounded through capacitors (col 4, lines 54-55; col 4 line 66 – col 5, line 1; col 5, lines 44-46; an RF shield **72** is connected to ground at points **76** both directly and through the capacitor formed by the sandwich of shield conductors **72**, **74** and shield insulator **62** and gaps **70;** alternatively, the fact that the RF shield *is* the capacitor could be read as the shield being grounded "via" the capacitor.) at four or more points whose directions are different from one another by an equal angle (col 4, lines 50-54). Richard does not teach the use of such a shield in a vertical field-type MRI system.

Carlson teaches a vertical field-type MRI system (Fig 1) comprising upper and lower RF shields (Fig 1, 2), which is coupled to ground only through capacitances (col 4, line 39-41; the fact that the shield foils "are electrically isolated from all other MRI structures" means that they are not directly grounded, but instead connected to ground by a capacitive coupling). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the RF shield of Richard et al. in a vertical field MRI apparatus such as the one taught by Carlson (replacing the upper and lower shields of Carlson), in order to gain the conventional advantages of a vertical-field type

MRI system, such as access to the patient (Carlson, col 1, lines 50-54) while retaining the desirable advantages of the shield disclosed by Richard.

Regarding claim 5, Richard et al. teach only one capacitor **60**, and as such it is necessarily "the smallest value".

Regarding claims 7 and 8, Richard et al. further teach that the capacitance is maximized in order to maximize current flow (col 5, lines 12-14; using this principle, Eq.1, and the dimensions given in col 4, lines 37-42, and Fig. 3 for guidance, it is seen that the capacitance used by Richard et al. is larger than 1000pF).

Allowable Subject Matter

5. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 10-11 are allowed.

Response to Arguments

7. Applicant's arguments with respect to claims 1-5 and 7 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments filed 29 December 2005 with respect to claims 6 and 8 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the RF shield and MRI system of Richard et al. is being modified by using it in a vertical-type MRI system such as the one described by Carlson, to replace the RF shields described by Carlson which share some properties to the shields described by Richard et al. (Carlson states that his RF shields are "electrically isolated from all other MRI structures", i.e., there is no DC connection between the RF shield and the ground—only a capacitive connection (which always exists). In this case, the capacitive grounding would be considerable and nontrivial since the foil shields have a considerable surface area and are positioned closely to the grounded pole tips (Fig 1, 2)). The advantages of a vertical-type MRI system are well known in the art (better access to the patient; reduced sense of claustrophobia, etc.) and in fact are even stated by Carlson (col 1, lines 50-54).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah Shipman whose telephone number is (571)272-8439. The examiner can normally be reached on Monday-Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (571)272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JS

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